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**CONTRIBUTIONS TOWARD A MONOGRAPH OF THE
NOCTUIDÆ OF BOREAL NORTH AMERICA.**REVISION OF THE SPECIES OF *ACONTIA* Ochs.

BY JOHN B. SMITH, SC.D.

Acontia, proposed by Ochsenheimer in "Die Schmetterlinge von Europe," IV, 91, 1816, is characterized essentially as follows: Medium sized species, with broad thoracic disc densely clothed with flattened scales, scutellum very large, inflated and extended over the first abdominal segment. Abdomen short, slender. Wings short and broad, greatly widened outwardly, primaries obtuse at the tip; secondaries rounded, with stout veins, 5 somewhat weaker. Head, breast, legs, abdomen and palpi closely scaled, the latter curved over the front, terminal joint obtuse. Eyes comparative large, globose and naked. Tongue spiral, moderate or strong. Antennæ simple in both sexes.

Our own species fit this description in a very general way only, the large number of species in our fauna showing variations in structure not paralleled in the poorer European fauna.

The eyes are naked, moderate in size; head moderate, closely applied to thorax but not retracted; its front flat, convex, inflated, protuberant, conically produced, with a small rounded truncate tip, drawn out into a flat process with a chisel-like tip, rough or smooth. As a rule the front is convex or moderately protuberant, in the latter case generally a little roughened. Palpi oblique, usually not exceeding the middle of the front. Antennæ and tongue as described. Thorax as described, save that the inflated scutellum varies and is sometimes scarcely noticeable. Sometimes an obvious though hardly prominent scale tuft prevents the ready recognition of this feature. Legs as described. Abdomen as described.

The wings vary considerably in form. Types like *aprica* agree rather well with the European forms. They vary to a more pointed, longer form as in *candefacta*, the hind angle being sometimes a little marked. A few species have them quite long and narrow as in *lanceolata*, *angustipennis*, etc. The venation also tends to become variable. In the primaries the accessory cell may be present or absent in one species (*candefacta*), but usually the normal noctuid

type is found. On the secondaries vein 8 may arise from the root or from the subcostal, and if the former it may reunite with the subcostal to form a loop at base, or it may run entirely free. As a rule it joins the subcostal close to the base and runs contiguous with it to the root.

It is in the origin and character of vein 5 that the greatest and most radical variation occurs, for we have within the limits of the genus, as recognized here, perfect trifids, perfect quadrifids and very good intermediids. There is even a very considerable range within the limits of one species. The forms in which vein 5 is weak, arising from the cross-vein well removed from the median and not connected with it by a strong spur, are *sutrix*, *megocula*, *neocula*, *elegantula*, *cretata*, *behrii*, *virginalis*, *binocula*, *meskei*, *tenuicola*, *libedis*, *neomexicana*, *candefacta* and *erastroides*. These are typical trifids.

The species in which vein 5 is as fully developed as the others and arises out of the median at the end of the cell, directly or on a very short spur, are *flavicosta*, *angustipennis*, *major*, *lanceolata*, *gonella* and *areli*. All these are true quadrifids, and, except *areli*, all are narrow winged species. But not all narrow-winged species are included; and *areli* varies a little, tending to the third series, in which vein 5 is little if any weaker than the others, and is from a longer or shorter stout spur out of the median, and not from the cross-vein.

The species belonging to this third series are *terminimaculata*, *delecta*, *flavipennis*, *abdominalis*, *lactipennis*, *expolita*, *sedata*, *nuicola*, *lucasi*, *biplaga*, *quadriplaga*, *schwarzii*, *arida* and *coquillettii*. All these might be called intermediids.

In one point nearly all these species agree; they have veins 3 and 4 forked from the median at some distance beyond the cell. *Expolita*, *neocula* and *cretata* are exceptions, 3 and 4 separating at the end of the cell; *libedis* is almost at the other extreme, the fork occurring beyond the middle of the distance to the margin. The venation therefore is as variable as it can well be within the family limits.

The scale covering of the upper surface is usually smooth and glistening giving the insects a characteristic appearance.

In the arrangement of the species several methods may be adopted, based primarily upon the narrow, broad or triangular wing forms, upon the pattern of maculation on the primaries, upon the color of the secondaries, upon the structure of the front,

upon the venation, or upon the colors of the head and thorax. Neither of these will give a natural sequence in all cases, and the arrangement adopted here is a mixed one based upon ease of recognition, which also associates into small groups closely allied species; though the groups are not always in the best natural relation to each other; but then we cannot hope to get natural objects in a linear series in any case.

The first two species, which may be considered as entitled to generic rank, have the front produced in the form of a flat chisel-like protuberance, and this series I have called *Tornacontia*. The species are *sutrix* and *megocula*, the character just given separating them readily from all the other species. They are larger forms, with the primaries a little pointed. In *sutrix* the base is mainly white or creamy to beyond the middle, where the lower dark half is squarely cut off from the upper paler region. At first sight this species looks like a larger form of *tenuicola*, in which, however, the front is merely inflated. *Megocula* has the primaries entirely gray, the orbicular a small black dot, the reniform large, white ringed, prominent, s. t. line white. It is a peculiar and easily recognizable form.

Two species, *angustipennis* and *flavicosta*, have the front conically produced and abruptly cut off at the tip. These may be called *Conacontia*, and they resemble each other in the narrow primaries, general similarity in maculation and dusky thoracic disk. They are easily associated with *lanceolata* on superficial characters, agreeing fairly well also in size.

In *flavicosta* the secondaries have a yellowish tinge and the pale shades of primary are distinctly creamy. The light color extends along the costal region to the s. t. line, usually unbroken, but sometimes tending to become interrupted beyond the middle.

Angustipennis much resembles this, but the secondaries are gray rather than yellowish, and the costal region of primaries is white. This white space is much narrower than in *flavicosta*, and is always more or less interrupted at and beyond the middle of the wing.

In all the other species the front is flat, protuberant or bulging, smooth or a little roughened, but never either conical and truncate or chisel like. There is some little individual variation here within specific limits, which makes it impossible to use this modification further for main divisions.

Terminimaculata is altogether different in color from all the other

species. It is whitish only at base and along costa; t. a. line a brown band, inwardly oblique from below costa; median space bluish gray, t. p. line sinuate, a red brown curved shade beyond it at the inferior half, altogether different from the other species, which are white, gray, black or olivaceous, but have no red or extensive brown shadings.

Flavipennis, *abdominalis* and *delecta* have the abdomen dusky and ringed with whitish or yellow; a character easily recognized and sharply distinct from the uniform white or gray of the other species.

Flavipennis is a dark, broad-winged form, secondaries tawny, with a broad black margin, primaries mostly black, with two quadrate white costal patches, the largest white square containing the small, round orbicular.

Abdominalis is similar in wing form, but lacks all yellow in the secondaries, and the primaries have much more white; in some examples, indeed, the basal half is white.

The posterior thoracic tuft in both the above species is well developed and the front is full though hardly inflated.

Delecta is much brighter throughout, larger and longer winged, secondaries yellow, with narrow, incomplete, smoky outer band; primaries with smooth, glistening, somewhat metallic vestiture. A broad, somewhat olivaceous bar extends from the basal third of costa toward the hind angle, the space above and below this white, more or less broken by darker shadings. The front is entirely flat.

All the remainder of the species have the abdomen unicolored, pale; and among them *lactipennis* stands out at once by its chocolate colored head and thorax. The body vestiture is composed of broad, shining scales, and the posterior thoracic tuft is obvious. The front is inflated and a little bulging. The primaries are chocolate brown at base, and have a broad olivaceous band before the outer margin, through which is a bluish, zigzag line. The secondaries are white, with an outer smoky or blackish border, variable in width, but always rather narrow.

Major, *expolita*, *lanceolata* and *gonella* have the head and collar white or yellowish, the thorax else gray or brown.

Major is a large species, in which the abdomen and secondaries are distinctly yellowish. The costal region is broadly white and squarely cut off at the s. t. line. The dark shade of the lower portion of primaries is broken at the t. p. line, and there is no complete

connection with the dark apical patch. The front is distinctly inflated and protuberant.

Expolita is much smaller, the secondaries and abdomen are merely tinged with yellow, and the dusky shading of primaries extends without break from the inferior base to the apex. The lower half of the outer margin and fringe is creamy white, making a decided contrast in color. The front is flat or scarcely convex.

In *lanceolata* the secondaries are white, with a narrow, smoky outer border; in the female sometimes smoky throughout. The species is rather large, the primaries with the lower half continuously gray or dusky to the t. p. line. The costal region is white, broken into two or three blotches by gray transverse maculation. The front is convex or slightly protuberant.

Gonella is decidedly smaller, the secondaries more dirty fuscous or smoky. The primaries have the dark shading of the lower half broken on the median space, so that the arrangement of the maculation is transverse, rather than longitudinal. The front is flat or only a little convex.

Sedata has head and thorax gray, a little mottled, and the primaries are also gray, two quadrate white costal patches representing most of the light maculation. The front is protuberant, bulging and rough.

Nuicola and *lucasi* have the thoracic disc only, gray in color. *Nuicola* much resembles *sedata* in wing form, in the protuberant rough front and in the general type of maculation. The base is always white, however, as is the basal half of the median space at least.

Lucasi is much closer to *lanceolata* in appearance, size and general type of maculation. The costal region is unbroken white to the s. t. line, indented by the dark reniform. The front is convex only.

Biplaga, *aprica*, *areli* and *erastroides* have the head and sometimes part of the collar dark, the thorax otherwise white. They are allied in a general way, yet easily distinguished.

Biplaga is mostly gray or blackish, with two quadrate, white, costal patches. The base may be white in part, or, in rare cases, nearly all white; but the median space is always solidly dark except for the costal patch. The front is protuberant and rough at the tip.

Aprica is white at the base and to at least the middle of the median space; along the costa the white shade extends to the s. t.

line, but usually broken on t. p. line so as to form one quadrate patch. Front as before.

Areli is pale to the middle of the wing for its full width, is then dark outwardly, except for a quadrate, white costal patch toward apex. The front is flat, scarcely convex and not at all rough. By its even division through the middle, this species is readily distinguished. It is also a little larger than its immediate allies.

Erastroides is altogether different from the species with which it is here associated; but, indeed, it does not closely resemble any other of this genus. The primaries are rather short and broad, the outer margin rounded, so that in wing form the species stands by itself. And that the dark shading, though broad on the inner margin, is terminated below the costa so that this is white to the apex, and the difference from all others in this immediate series is obvious.

In the remainder of the species the head and thorax are entirely white.

Quadriplaga resembles *biplaga* in color, wing form and in the two quadrate, white costal patches in each wing. But it is distinctly smaller and the secondaries have a yellowish tinge.

Schwarzii and *arida* are forms in which the dark shading starts on the internal margin within the middle, extends obliquely to the reniform, then runs parallel with the costa nearly to the s. t. line where it breaks squarely to the costa. A dusky shading from the costa at the t. p. line tends to and often does cut off a quadrate white patch. Even when it does not, the square termination of the white gives the impression of such a spot.

Schwarzii is the larger of the species, and the dark shadings are smooth, glossy steel-gray. This dark shading invades the base, but is undefined. The front is rough and a little protuberant.

Arida is a brighter, more definitely marked species. The dark shadings are olive-gray, and a yellow tinge seems to pervade the wing without being definitely localized. The course of the yellowish s. t. line is characteristic, forming a prominent, acute, upward tooth opposite the anal angle. The front is smooth and only a little convex.

In all the remaining species the base is white or creamy to or beyond the middle, though it may be clouded with gray or crossed by gray lines. Usually the gray shading begins on the inner margin at or beyond the middle and curves toward the apex, reaching the costa at or about the s. t. line. Sometimes it includes the

terminal space and sometimes it does not. Sometimes yellow or olivaceous replace the gray, or there may be a mottled effect produced by the presence of all three.

Coquillettii, *neocula*, *cretata* and *behrii* have neither orbicular nor reniform. Of the orbicular no trace exists; the reniform is sometimes obscurely indicated in individual examples, but usually there is not even a trace.

Coquillettii differs at once from the others in having the secondaries black, with white fringes. The primaries have a yellow tinge, two dusky clouds on the costa and a broken dusky s. t. band. The front is full and a little bulging, but hardly protuberant.

Neocula has the dusky outer band narrow, the basal and median space almost unbrokenly white. There is, occasionally, a small costal cloud, and very rarely a trace of a basal cloud; but these are exceptional and so poorly marked that they are readily overlooked. The front is convex and a little roughened, but hardly protuberant.

Cretata has the outer gray shading broader, more defined. There is more or less gray along the costa, sometimes extending to base so as to make visible the t. a. line in the costal region. The two last named species are very closely allied, but from the series at hand seem to be distinct. The front is a little protuberant in some examples, but usually convex only.

Behrii has the outer shading much more aggressively marked with rougher, black scales, the s. t. line slender, blue, marked by black spots and shades. The t. a. line is gray and completely defined across the wing. The front is scarcely convex.

Elegantula, *virginalis* and *binocula* lack the orbicular, but have the reniform present and obviously marked in all examples.

Elegantula is easily recognized by the continuous dark band across the middle of the wing, beyond which it is dusky. It is thus almost half white, half dusky and always readily distinguished. The front is conically protuberant but not truncate at tip. Nevertheless it is close to the *Conacontia* type.

Virginalis has a yellow median shade band which is traceable in all examples and usually obvious, though by no means contrasting. The entire wing has a somewhat yellowish tint beyond the middle, the dusky oblique shade being narrow and broken. The reniform is a solid round gray spot, with a narrow white annulus. The front is convex and tends to become protuberant.

Binocula is similar to the preceding, but with the yellow band

much less marked, the dark shading much broader, and in all respects much better defined. None of the specimens that I have seen had the oblique band at all broken, and in all of them it begins at almost the exact middle of the hind margin. The front is convex, a little inflated, but hardly protuberant.

In all the remaining species the orbicular is represented by a more or less obvious black dot, the reniform being also obviously present in all cases except *meskeana*, where it is either wanting or merely traceable.

This latter species has a faint yellowish tinge throughout, the dark shading begins on the inner margin beyond the middle, extends to the median vein and is then abruptly cut off to the s. t. line, along which it then extends to the costa. The median lines are both marked by black spots on the costa. The front is protuberant and roughened.

Tenuicola is of the same general type, but much darker as well as smaller in size. The dark shading often begins on internal margin at the t. a. line, and always before the middle, while the s. t. space is all dark except the costa. The reniform is always distinct, whitish centered and dark ringed. The front is protuberant and a little roughened at tip.

In *neomexicana* and *candefacta* the dusky shading is smooth, a little olivaceous and narrows gradually, embracing half of the reniform which is solid gray, annulate with white. There is a more or less obvious, yellow, median shade from a dusky costal blotch.

Neomexicana is much the paler, and the outer dusky band is broken, much narrower than in *candefacta*. The secondaries are white, the front is protuberant and roughened.

Candefacta has the secondaries largely smoky, with contrasting white fringes. The outer dusky shading of primaries begins at or within the middle of the internal margin and extends without break to the apex. The front varies from inflated to strongly protuberant, and is more or less roughened.

Tarache ardoris Hbn., I have not identified among the material in my possession. South American examples are in the Neumoegen collection, and Mr. Grote has doubted the North American habitat of the species. Unfortunately, I have had no material from Georgia or Florida, hence cannot say positively that the species does not occur. The species resembles *candefacta* in a general way but has narrower primaries and a yellow tinge to the secondaries.

For the present it must be, if doubtfully, held among our species.

SYNOPSIS OF THE SPECIES.

1. Front of the head produced into a long process with a flat, chisel-like tip.
Tornacontia 2.
 Front conically protuberant to a round, small, truncated tip, which is rough and bare..... **Conacontia** 3.
 Front flat, convex, inflated or protuberant, smooth or rough; variations being found in the same species..... **Acontia** 4.
2. Primaries white or creamy to middle, where the lower dark half is squarely cut off from the paler costal region..... **sutrix**.
 Primaries all gray; orbicular a punctiform black spot; reniform large, round, blackish, white ringed, prominent..... **megocula**.
3. Costal region of primaries broadly yellowish to the s. t. line, usually unbroken; secondaries with a yellowish tint..... **flavicosta**.
 Costal region of primaries narrowly white, usually interrupted by dark bars; secondaries gray..... **angustipennis**.
4. Primaries mainly reddish brown in tinge, whitish only at base and along costa, an inwardly oblique brown band forming the t. a. line.
terminimaculata.
 Primaries ranging from white to black and white spotted, without red or red-brown marks or bands: usually white, with gray, yellowish or blackish shadings..... 5.
 Abdomen dark or blackish, conspicuously ringed with white or yellow.... 6.
 Abdomen concolorous with secondaries, never obviously ringed or banded.. 8.
6. Primaries moderately elongate, trigonate; secondaries yellow, with an incomplete outer smoky band; primaries with a broad dark bar from basal fourth of costa diagonally across the disc..... **delecta**.
 Primaries short and broad, outer and inner margin almost equal in length; primaries without the discal bar..... 7.
7. Secondaries blackish, disc and fringes tawney; primaries mostly black or gray, with large quadrate, white costal spots..... **flavipennis**.
 Secondaries blackish, disc and fringes whitish; primaries in general as before but with much more white..... **abdominalis**.
8. Head and thorax chocolate brown; primaries with a chocolate brown patch at base..... **lactipennis**.
 Head and collar white or yellowish, thorax else gray or brown..... 9.
 Head and thorax all gray, a little mottled.. 10.
 Head white, disk of thorax gray..... 11.
 Head gray or black, thorax white..... 12.
 Head and thorax all white or creamy..... 13.
9. Secondaries and abdomen yellow; size large; dark markings of primaries continuous along inner margin, broken between the median space and apex... **major**.
 Secondaries and abdomen with a faint yellow tinge; size small; dark markings of primaries continuous from base to apex, leaving the costa white..... **expolita**.
 Secondaries and abdomen whitish; dark markings of primaries continuous along inner margin and to apex; costal white region broken by two broad bands, which are usually incomplete; larger.... **lanceolata**.
 Secondaries smoky outwardly; primaries mottled, median space white to the inner margin..... **gonella**.

10. Entire thorax gray; primaries mostly gray, two large, quadrate, white costal patches representing most of the white markings.....**sedata**.
Disc of thorax gray, patagiæ whitish; primaries mostly white at base and to the middle of the wing.....**nuicola**.
11. Costal region broadly white to s. t. line; dark shade continuous along internal margin to s. t. line, then upcurved to apex.....**lucasi**.
12. Primaries mostly gray or black, with two quadrate, white costal patches; basal space more or less white mottled.....**biplaga**.
Primaries white to the middle of median space, more or less gray mottled; one quadrate, white costal patch before the apex, not always completely separated off.. ..**aprica**.
Primaries with basal half white or creamy, rigidly separated from the dark outer half, which is broken on the costa before apex by a quadrate, white patch.....**areli**.
Primaries creamy white; from median shade to s. t. line on inner margin a dark shade extends to the cell and obliquely outward to vein 7, leaving the costa clear to the apical region.....**erastroides**.
13. Primaries chiefly gray, leaving two quadrate white spots on the costa14.
Primaries more evenly divided between white and dark, the dark shadings so arranged as to provide for a quadrate, costal white patch before apex, though this may not be completely separated off.....15.
Primaries white or creamy from base to or beyond middle, clear and interrupted; outer portion of wing gray, yellow or olivaceous, not squarely terminated in the costal region so as to indicate a quadrate ante-apical patch16.
14. Resembles *biplaga*; orbicular wanting, secondaries decidedly yellowish.
quadriplaga.
15. Larger; primaries smooth, steel-gray and white, the shade undefined; s. t. line without notable peculiarity**schwarzii**.
Smaller; creamy, with yellowish and olive smooth shadings; s. t. line yellowish, unusually broad and distinct, forming a prominent, acute upward angle opposite the hind angle**arida**.
16. Orbicular absent.....17.
Orbicular present as a more or less defined black dot.....22.
17. Reniform wanting.....18.
Reniform present.....20.
18. Secondaries black, fringes white; primaries with a creamy shading.
coquillettii.
Secondaries white19.
19. Outer gray shading narrow, smooth, costa rarely with a trace of gray clouds basally.....**neocula**.
Outer gray shading broader, more defined; costal region more or less gray clouded, so as to usually define the t. a. line.....**cretata**.
Outer dark shading blackish, with rough black and blue scales....**behrii**.
20. Base unbroken white to the middle, then gray or darker, rigidly defined by a broad median band.....**elegantula**.
Basal white shade extends along costa to s. t. line; the dusky outer shadings not rigidly defined21.
21. Size larger; a yellow median shade line; a narrow, yellowish and gray curved band from outer third of inner margin to apex...**virginalis**.

Smaller; yellow median shade more obscure; outer shadings gray or olivaceous, broad, beginning at or within middle of inner margin.

binocula.

22. The dark shading is sharply defined inwardly and abruptly cut above the middle of the median space.....23.

Dark shading less well defined, evenly oblique inwardly, not abruptly cut or narrowed above the middle of median space.....24.

23. Reniform obscure or wanting; outer dark margin narrow, base white or creamy to the middle and in the costal region almost to the s. t. line.

meskei.

Reniform distinct, round, white centered; outer dark margin broad; base white or creamy only to the t. a. line or a little beyond...**tenuicola.**

Reniform as before, dark shade forming only a large quadrate patch on the inner margin, else luteous or olivaceous, except at base....**libedis.**

24. The dusky shade is smooth, glossy and extends to the apex.....25.

25. Secondaries white or nearly so; outer dusky band of primaries narrow and broken.....**neomexicana.**

Secondaries more or less smoky, with white fringes; altogether darker; outer dusky shading of primaries begins at or within middle of inner margin and extends, unbroken, to the apex.....**candefacta.**

Tornacontia sutrix Grote.

1880, Grt., Can. Ent., xii, 154, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 299, *Acontia*.

Head, thorax and abdomen white, with a faint yellowish tinge, which is best marked on the abdomen. Palpi short and weak, hardly exceeding the front of the head. Primaries creamy white at base: below median vein this is bounded by a broad black median shade, which is upright and conspicuous from median vein to inner margin: above this the creamy shade extends into the s. t. space, though irregularly and not definitely bounded anywhere. T. p. line fragmentary, deeply sinuate, mostly olivaceous, partly black marked. S. t. line white, broad, very irregular, sending a long spur into the submedian interspace. This line is partly preceded by luteous brown, and in the lower half of wing by irregular bluish and gray mottlings. Terminal space mottled with leaden gray, or ochreous and white, the apex always dark. A broken black terminal line. Fringes mostly dark, with a prominent white patch below the middle. Orbicular black, punctiform, always present. Reniform upright, oval, incompletely outlined in black, followed by a rather prominent black spot which rests on the t. p. line. Secondaries smoky or paler, glistening; fringes white. Beneath, primaries smoky to blackish, irregularly paler along the outer and costal margins. Secondaries white or faintly yellowish, the outer margin dusky, a dusky half band from costa, and a small discal lunule.

Expands 20-25 mm. = .80-1.00 inches.

Hab.—Colorado, June; Poncha Springs in July; Denver in August; Nevada; Arizona; New Mexico.

Twenty two examples are before me, and no two are alike. The tendency is, primarily, to soft, silver gray shadings in the pale basal space, which may become so complete that only a pale t. a. line is

left. The first tendency in these shades is to define such a line, next to complete the median shade, and next to define the t. p. line. Yet, with all this variation of mottling, the maculation as first described is easily distinguishable in all cases. The species seems to be rather a common one in its range.

Tornacontia megoecula n. sp.

Head, thorax and abdomen white. Primaries almost uniformly steel gray, white powdered in the basal space, and the t. a. line faintly indicated. A whitish longitudinal streak is in the cell, extends from the orbicular to the reniform and beyond it to the outer margin. S. t. line white, only a little irregular. A whitish costal patch before the s. t. line, and the veins are cut with white through the terminal space. The orbicular is a slightly elongated black dot. Reniform large, black powdered, annulate with white, round, conspicuous. Secondaries white, with a vague smoky outer border. Beneath, primaries smoky, costal and outer margin a little paler; secondaries white.

Expands 30 mm. = 1.20 inches.

Hab.—Southern California (Barnes).

One female, in fair condition only. The species is very distinct and at once separable from all the others near it in structure by the uniform gray suffusion and by the large round reniform, which is annulate with whitish. The frontal structure is essentially as in *sutrix*, but the chisel-like tip is narrower. The median vein forks into 3 and 4 about one-third beyond the end of the cell, and in this the species agrees with its generic ally. In both species also vein 5 arises from the cross vein almost midway between 4 and 6, though nearer to 4. It is practically as strong as the remainder of the veins.

Conacontia flavicosta n. sp.

Head and collar creamy white, a very little shaded with gray. Thorax else ochereous brown. Abdomen with a slightly yellowish tinge. Primaries cream yellow along the costa from base nearly to the s. t. line extending inward to the middle of the cell or even below the cell itself, the tendency being to narrow at the outer portion of median space. The median shade may be marked on the costa, and, at the inception of the t. p. line, there may be an olivaceous shading which tends to cut off an irregular ante-apical patch. The inferior half or $\frac{2}{3}$ of the primaries, from base to s. t. line and extending through s. t. space to costa, is a brownish gray, varying a little toward luteous or olivaceous. T. a. line sometimes distinct, single, dark, upright from inner margin to the costal shade, sometimes altogether wanting. Median shade a whitish, yellowish or bluish irregular undefined band, which may also be wanting. T. p. line usually indicated on costa, indicated by black scales beyond the reniform, deeply incurved below the cell, and visible in all specimens as a broken black single line. S. t. space partly leaden filled, varying to whitish mottlings inferiorly. S. t. line white on the costa, yellowish and diffuse toward hind margin, often taking in all the terminal space at the hind angle. Terminal space more or less gray filled, always dark at

the apex. A broken black terminal line. Fringes mostly gray, a whitish patch at about middle and another half way between it and apex. Orbicular punctiform, small, often wanting. Reniform obscure, at its best upright, oval, the sides outlined by black or olivaceous scales. On some examples it is barely indicated. Secondaries smoky yellowish, very light and a little glistening. Beneath, primaries yellowish, disc smoky; secondaries white, smoky toward outer margin.

Expands 23-27 mm. = .92-1.08 inches.

Hab.—Hot Springs, New Mexico, 7000 ft. (Hulst); Colorado (Bruce); Black Hills, Montana (Hulst).

Seven examples, five of them males, are before me. They vary in the amount of dark shading, but in no case is the yellowish costal shade cut before the inception of the t. p. line and then incompletely. As it happens, both specimens where this occurs are females, and it may be that in this sex there is uniformly more gray. Four of the males have the creamy margin unbroken to the s. t. space.

Vein 5 is as strong as the others and from the median at the end of the cell. Veins 3 and 4 branch one-third from the end of the cell.

***Conacontia angustipennis* Grote.**

1875, Grt., Proc. Acad. Nat. Sci. Phil., 1875, 426, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 299, *Acontia*.

Head and collar white or with a faint yellowish tinge, more or less gray mottled. Thorax else smoky gray or brownish. Abdomen yellowish, pale gray. Primaries white or faintly yellow tinged along the costal margin, the costa itself gray shaded. The white shade extends from base above the median vein to the median shade. It is there interrupted in whole or in part, and beyond this the white is reduced to half its width and again interrupted at t. p. line, leaving an irregular though subquadrate spot in the s. t. space. The dark shading of the wing is smoky gray, sometimes with an olivaceous tinge, extends through the lower part of the wing from base to s. t. line and through s. t. space to the apex. S. t. space bluish or white mottled inferiorly, varying in amount. Terminal space white mottled, except at apex where it is gray, emphasized by a small black spot. T. a. line traceable in most specimens through the dark portion of the wing, single, upright. Median shade olivaceous on costa where it starts as a triangular patch, wholly or almost crossing the pale costal space, usually lost in the darker shade. T. p. line starts from an olivaceous quadrate costal patch varying in size, fragmentary over the cell, deeply incurved below and made up of blackish, lunate, interspaceal marks through the dark shading. S. t. line white on the costa, broken and irregular at apical fourth, then diffuse and more or less filling the terminal space. A black terminal line, broken on the veins. Fringes long, gray at base, violaceous outwardly, cut with white at apical fourth. Orbicular wanting, or a small black dot only. Reniform round or nearly so, olivaceous ringed, sometimes olivaceous filled as well. Secondaries grayish to smoky, with white fringes. Beneath faintly yellow tinged, primaries with disc irregularly smoky; secondaries with a small discal lunule and a narrow, smoky outer border.

Expands 25-28 mm. = 1.00-1.12 inches.

Hab.—Ft. Collins, Colorado (Gillette); Glenwood Springs, Colorado (Barnes); New Mexico; Pierre, South Dakota (Truman).

Five examples, only one of which is a male. Compared with the preceding, the present species is much more gray, the white costal shading much more broken up and never extending below the median vein. The tendency here is to a round, solid gray reniform, three of the five specimens being so marked.

The venation of the secondaries is practically as in *flavicosta*.

***Acontia terminimaculata* Grote.**

1873, Grt., Bull. Buff. Soc. Nat. Sci., i, 153, *Tarache*.

1874, Grt., Bull. Buff. Soc. Nat. Sci., ii, 162, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 301, *Acontia*.

Head and thorax bluish pale gray, varying toward yellowish in some cases. Abdomen yellowish pale gray. Primaries creamy or bluish gray in basal space and along costa to t. p. line. T. a. line a broad, inwardly oblique brown or blackish band, which does not cross the costal region. Median space bluish or violet-gray; outer portion above, blackish powdered before t. p. line; below with a bright rusty red-brown half band, anteriorly defined by a white median line which does not extend above the middle, outwardly by the t. p. line. T. p. line an oblique white mark on costa, defined by a blackish shading opposite the cell, deeply incurved and whitish below the middle of the wing. S. t. space more or less brown shaded, tending to luteous toward the hind margin on which rests a violet shade. S. t. line indefinite. A series of black terminal dots on the veins. Orbicular a small black dot or wanting. Reniform large, with a vague smoky outline, else concolorous. Secondaries yellowish to smoky, with concolorous fringes. Beneath, primaries tawny, with a smoky disc. Secondaries paler, with a narrow smoky median line which may be obsolete.

Expands 25-27 mm. = 1.00-1.08 inches.

Hab.—Massachusetts; New York; New Brunswick, New Jersey, August 18th; Illinois in August. Probably occurs throughout the Middle and Central States.

Three specimens only are at present under examination; but I have seen many others that did not differ essentially in appearance. The variation is chiefly in the differences of shade of the lighter portions of the wing, and this ranges from almost white to decided cream yellow in one direction, to almost violet in the other.

The body is, on the whole, more robust than in its allies, and the wings are a little broader. The inner margin is sinuate and the hind angle is a little drawn out or produced. On the posterior wing the 3rd and 4th veins arise from the end of the cell and 5 arises from a little spur, close to and as strong as the submedian.

***Acontia delecta* Walker.**

1857, Wlk., Cat. Brit. Mus., Het., xii, 799, *Acontia*.

1868, G. and R., Trans. Am. Ent. Soc., ii, 78, *Tarache*.

1874, Morr., Proc. Bost. Soc. N. H., xvii, 212, *Tarache*.

1888, Weeks, Ent. Amer., iv, 46, larva.

1892, Beut., Bull. Am. Mus. N. H., iv, 68, larva.

1893, Smith, Bull. 44, U. S. Nat. Mus., 301, *Acontia*.

metallica Grt.

1865, Grt., Proc. Ent. Soc. Phil., iv, 327, pl. ii, f. 7, *Acontia*.

1868, G. and R., Trans. Am. Ent. Soc., ii, 78, pr. syn.

Head, collar and disc of thorax dark chocolate-brown, overlaid by metallic gray or blue scales. Patagiae white. Abdomen pale yellow, banded with blackish. Primaries white from base to outer third of wing, interrupted by a broad band of metallic gray and mossy dark green, which extends from basal fourth of costa diagonally across the disc to a little below the middle of the dusky outer shading. The white shade is also interrupted by a metallic gray spot at basal third of inner margin. T. p. line is indicated by a mossy green costal patch, is lost in the white space, and reappears below it as a narrow, metallic blue line, preceded by a mossy green shading. S. t. space mostly deep carmine, with blue metallic interrupting lines. S. t. line metallic blue at inception, white, with metallic shadings from apical third. Terminal space white, except toward and at apex. A series of terminal black, venular marks. Fringes mossy at inner angle, then white to middle, the upper portion mostly metallic steel or blue gray. No apparent orbicular. Reniform a mossy green, undefined blotch, which may be absent. Secondaries yellow, with a broad blackish outer band, which does not extend to the anal angle. Beneath yellow; primaries with a black or blackish disc, and a black anteapical costal spot. Secondaries with a black anteapical costal spur.

Expands 25-28 mm. = 1.00-1.15 inches.

Hab.—New York and southward to Florida and Texas; not common.

This very handsome species is so much different from all its allies that recognition should be easy. The wings are moderately developed, the hind margin a little sinuate, hind angle not notably produced.

On the secondaries, the median vein forks at about one-fourth from end of cell; vein 5 is from a short spur at the end of the cell near to the submedian and about as strong as the others.

Morrison lists *delecta* from Texas, May 5th and 7th; but judging from what he says in connection with this, it seems almost certain that the species before him was *abdominalis* Grt., and not the form here referred to.

***Acotia flavipennis* Grote.**

1873, Grt., Bull. Buff. Soc. Nat. Sci., i, 153, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 298, *Acontia*.

Head and thorax black, relieved by scattered white scales. Abdomen black, segments narrowly white ringed. Primaries mostly black or dark smoky brown,

variably marked by white. There is always a large irregular white costal patch which includes the black, punctiform orbicular and extends to the narrow, upright black reniform; in one case it included this spot. A second white, much smaller patch, is at the inception of the t. p. line. In one example the terminal space is mostly white, in three others it is uniform with the dark shading. Three specimens have a more or less obvious whitish patch on the middle of the inner margin; two specimens have a whitish streak from base to t. a. line, which latter is white marked in one example. T. p. line a series of black interspaceal spots, sinuate in general course, sometimes accompanied by metallic blue scales. S. t. line white, slender, more or less broken, irregular, preceded by black scales which, in one case, seem to have absorbed the white. A series of black terminal marks on the veins. Sometimes all beyond the t. p. line is deep red-brown. Secondaries black, with the disc tawny yellow, veins and a discal lunule black. Beneath, tawny yellow, in one case with only a discal lunule and a costal mark at outer third black. Usually there is a black outer margin, an outer half band and a black discal spot. The primaries may have part of the disc also blackish.

Expands 20-25 mm. = .80-100 inches.

Hab.—San Diego, Sonoma and Placer Co. (June), California; Sierra Nevada; Oregon.

Four examples, male and female, selected from a series to show variation, are under examination. Of what this variation consists has been sufficiently indicated in the general description. The wings are broad, outer margins rounded, apices obtuse. The secondaries branch 3 and 4 one-third from end of cell; 5 is as strong as the others, and is from a short spur of the cross-vein close to the median.

The species should be readily recognized by the tawny secondaries and very dark primaries, on which the two white costal patches only are really relieved.

Acontia abdominalis Grote.

1877, Grt., Can. Ent., ix, 157, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 298, *Acontia*.

Head and thorax smoky gray-brown; collar white lined at base and sometimes white mottled, patagiae white edged and rarely all white. Abdomen dark smoky, narrowly white ringed. Primaries mainly white to the outer portion of median space. The basal space is always gray mottled, at least on costa and may be entirely gray, in which case the t. a. line is indicated as nearly upright, a little angulated on the median vein. From this angle a gray shade may extend across the white portion of the median space dividing in into two large subquadrate patches. T. p. line starts from a white costal spot, is then black, broken on the veins, the spots irregular, sinuate in course, usually preceded by metallic blue scales. S. t. space more or less red-brown, rarely gray. S. t. line white, preceded by black scales and shadings. Terminal space irregularly mottled with white, gray, blue and black, no two specimens alike, save that the apex is always dark. A broken black terminal line. Fringes mostly dark, but always broadly cut

with white below the middle. Orbicular black, punctiform, always present on the white shading and usually well marked. Reniform gray or blackish, oval, not well marked, often lost in the dark shading. Secondaries mostly blackish, becoming pale basally and with a dusky discal lunule. Beneath curiously mottled with black and yellowish white. Primaries black, inner margin, part of costa, part of terminal space, an ante-apical blotch and a triangular discal blotch pale. Secondaries mostly pale; a black outer band, from which a central ray is sent to the base; a discal lunule, a half band from the costa, and one or two rays from the base, all blackish.

Expands 21-26 mm. = .84-1.04 inches.

Hab.—Kansas in May; Arizona; Texas, March, May, September, December.

Eight specimens, representing both sexes, are under examination and no two of them are alike. The two extremes are: a base uninterruptedly white to the outer portion of median space, and a wing solid gray, with two quadrate costal patches, a whitish longitudinal shade over submedian vein, and a whitish patch on internal margin. Between these extremes all possible intermediate forms occur.

In wing form and general habitus this species resembles *flavipennis*, as it does also in the venation of the secondaries. Vein 5 seems to be a little more remote from the median, but otherwise there is no difference, and this is hardly appreciable in some cases.

***Acontia lactipennis* Harvey.**

1875, Harv., Bull. Buff. Soc. Nat. Sci., iii, 10, pl. ii, f. 3, *Turache*.

1875, Harv., Can. Ent., vii, 135, *Turache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia*.

Head and thorax glistening chocolate-brown. Abdomen white. Primaries with an oblique chocolate patch at base, narrow on costa, extending to about one-fourth on inner margin; beyond this, white to the outer part of median space. At the outer portion of wing is a deep, dark mossy green band, extending from just within the hind angle, first a little incurved, then outcurved, to the apex, leaving the terminal space white. A narrow denticulated metallic blue line runs through this shade, representing the s. t. line. A yellow spot at outer third of costa sends an oblique yellow shading outwardly to join the band at about the place of the reniform. This is variably evident and is about the only variable feature in the wing. The ordinary spots are wanting. Secondaries white, with a variably distinct outer band, sometimes complete, more rarely starting broadly at the apex and narrowing to nothing a little before the anal angle. Beneath, primaries blackish, except along the margins. Secondaries white.

Expands 24-28 mm. = .96-1.12 inches.

Hab.—Texas, April to June.

Eight examples, evenly divided as to sex, are before me and I have seen numerous others. This is one of those satisfactory spe-

cies that is easily recognizable and obviously distinct from any allies. The variation is scarcely appreciable and the chocolate-colored head, thorax and base of primaries are characteristic.

The primaries are moderately elongate, trigonate, outer margin oblique, convex, apex marked. Secondaries with 3 and 4 forking a short distance beyond the cell, 5 weaker than the others, arising from a short spur from the median.

Acontia major n. sp.

Head mostly brown, posteriorly white marked. Collar white. Thorax else brownish gray. Abdomen with a yellowish tinge. Primaries broadly white in the costal region, extending to the middle of the s. t. space, where it is squarely terminated. This shade may be uninterrupted, or it may have on the costa small black marks at the inception of the median lines. The lower half of the wing is gray-brown, more or less violet tinged to the t. p. line. At the apex is a quadrate patch of gray-brown, marked by black and blue scales, and between these dark shades is a gray irregular mottling. Lower half of subterminal and terminal spaces white, more or less gray mottled. T. a. line indicated by black scales through the dark portion of the wing. T. p. line marked in a fragmentary way opposite the cell and more evidently by black interspaceal lunate marks in the dark shading. S. t. line marked by black and blue scales in the dark apical patch, then lost in the white, or imperfectly defined by gray shadings. A series of prominent, black, interspaceal, terminal marks. Fringe gray at hind angle and at apical third, but mottled with white; elsewhere white. Orbicular a small black spot. Reniform small, gray, laterally black marked. Secondaries yellow tinged, with a smoky outer margin, which is broad on the costa and narrows to nothing at the anal angle. Beneath, primaries with disk blackish, margins irregularly yellow; fringes cut with blackish at apex, at one-third from that point and at the hind angle. Secondaries uniform yellow.

Expands 26-29 mm. = 1.05-1.16 inches.

Hab.—Colorada, without definite locality.

Two females from Dr. Barnes. It is probable that the the range of variation is greater than indicated in the two examples, but I have seen no others. The primaries are somewhat elongate, tending to subparallel, apices marked but scarcely prominent. In the secondaries vein 5 arises directly from the median at the end of the cell, is moderately strong only, and 3 and 4 fork about one third of the distance toward the outer margin. The body is robust, the head seeming, proportionately, to be rather small.

Acontia expolita Grote.

1882, Grt., *Papilio*, iii, 131, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 298, *Acontia*.

Head and collar white, thorax gray, a little mottled. Abdomen yellow tinged. Primaries with costal region white or creamy, unbroken to the s. t. line. Remainder of the wing gray, except the lower half of the terminal space and the

fringes opposite. This gray portion of the wing is shaded with mossy green, violet and carmine, but not evenly, nor alike in the specimens. In general, the violet shades extend through s. t. space, sometimes forming a blue line, and then along inner margin. The green shades border the white anterior region, and the carmine shading is apical. In one example the t. p. line crosses the pale costal region as a narrow greenish line. The orbicular is wanting; reniform obscurely olive margined. Secondaries with a faint yellowish tinge. Beneath yellowish, primaries more positively so, the disk dark or blackish. Secondaries with or without an obscure discal lunule.

Expands 18-20 mm. = .72-.80 inches.

Hab.—Arizona; Round Mt., Texas.

Two males and two females, all very much alike and agreeing with the type. The species is very characteristic and, with its broad pale costal region and white hind angle is easily recognizable. The primaries are moderately long, trigonate, with long fringes. Secondaries with 3 and 4 forking at the end of the cell, not beyond as is usual; 5 decidedly weaker and from a short spur nearer to 4.

Acontia lanceolata Grote.

1879, Grt., Can. Ent., xi, 198, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 299, *Acontia*.

Head mottled with gray. Collar white. Thorax else gray. Abdomen dirty white. Primaries white along costal region to the middle of the s. t. space where it is squarely cut off. The median shade is marked on the costa and may extend across the costal white space as a gray bar or a yellowish shading. T. p. line broadly marked on the costa, usually extending across the white space as a broad bar, though sometimes only as an olivaceous shading. There may be thus, along costa, a continuous white space from base to the middle of s. t. space; a white bar to t. p. line and a quadrate white patch beyond; or there may be a white bar to the middle, followed by two quadrate white costal patches. Below the median vein the wing is gray, becoming olivaceous and tending to mottled beyond the t. p. line toward the apex. S. t. and terminal space white mottled below the middle. Fringes mostly gray, cut with white at the middle and half way between it and tip. There is a series of evident, black terminal dots. T. a. line traceable through the dark color in some specimens as an upright, dusky shading. T. p. line is broken, sinuate, dusky, never more than traceable. S. t. line marked by blue and black scales in the brown apical patch, narrow whitish below, until it merges into the irregular mottling of the s. t. and terminal space above the hind angle. Orbicular absent. Reniform olivaceous, oval, sometimes white centered, sometimes only laterally outlined, in very dark specimens lost in the broad bar from the t. p. line to costa. Secondaries soiled whitish in the male, to slightly smoky in the female, fringes white. Beneath, the general shading of the primaries is obscurely produced, the lighter shades with a yellowish tinge. Secondaries white.

Expands 24-26 mm. = .96-1.05 inches.

Hab.—Texas; Argus Mts., Arizona, April.

Three males and two females, all in fair condition. No two are quite alike, yet all are so similar that their identity is without question. The range of variation has been practically discussed in the description, and consists chiefly in the relative amounts of white and gray. The primaries are elongate and comparatively a little narrowed. Secondaries with vein 5 nearly as strong as the others, arising out of the median at the end of the cell; 3 and 4 dividing nearly half way to the outer margin.

***Acontia gonella* Strecker.**

1898, Streck., Lep. Rhop. et. Het., Suppl. 1, p. 11, *Acontia*.

Head white and gray mottled. Collar white inferiorly. Thorax else gray. Abdomen dirty white or yellowish. Primaries, upper half of basal space white, lower half olivaceous gray or brown, the division not accurate, sometimes more white, sometimes more gray. T. a. line in the form of a broad gray band, outwardly angulated at the middle, sometimes marked on the costa only, and then the basal white is connected with the white of the median space. Median space all white above the median vein, below that point, to the t. p. line, is a broad, olive-green band. Beyond this band the s. t. space is gray filled, making altogether a large subquadrate dark patch. T. p. line marked by an olivaceous gray shade on the costa, thence by a broken gray shade outcurved over the cell, and an incurved series of black lunules in the dark space below the reniform. An apical olivaceous gray patch extends half way through s. t. space on costa and squarely separated there from the white. S. t. line marked by a white costal dot, black and blue powdered through the dark apical space, whitish and diffuse below the middle. Between the dark quadrate patch resting on the inner margin, and the dark apex, the space is irregularly mottled, and no two examples are alike. There is a series of distinct black terminal spots. Fringes dark at apex and sometimes at hind angle; interval more or less completely white or yellowish. Orbicular a black or olivaceous discal spot, variably distinct. Reniform round or oval, solid gray or outlined, with palé centre. Secondaries smoky, with whitish base in the male, all smoky in the female. Fringes yellowish, with a smoky interline. Beneath, primaries dusky on disc; costa yellow, cut with blackish at outer third, pale along inner margin, fringes cut with yellow about middle and before apex. Secondaries yellowish, with a smoky outer margin, fringes yellowish. An oblique smoky bar outward from outer third of costa, changing to a slender line parallel with outer dark band. A smoky discal lunule.

Expands 20-24 mm. = .80-.96 inches.

Hab.—Phoenix, Arizona, April and August (Dr. Barnes); Arizona; Hot Springs, New Mexico, 7000 ft. (Dr. Hulst); Las Vegas, New Mexico (Cockerell, No. 800).

Four males and two females, all different. This species is similar to *sedata* in type of maculation but much more white, and somewhat larger. The division of the basal space into upper white and lower gray portions is characteristic. The primaries are rather narrow and elongate. Secondaries with 5 only a little weaker, from the

median, at the lower angle of cell, 3 and 4 branching about one-third to one-half beyond the end of the cell.

***Acontia sedata* Hy. Edwards.**

1881, Hy. Edw., *Papilio*, i, 23, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia*.

Head and thorax gray, a few white scales giving a somewhat mottled appearance. Abdomen dull smoky. Primaries leaden gray, mottled with yellowish white in the basal space. A quadrate white costal patch, in which is the distinct black, punctiform orbicular. A smaller, white, also quadrate costal spot before the apex. T. a. line geminate, gray, white filled, obscure, outwardly oblique, a little outward tooth at its middle. A fragmentary blackish median shade is traceable in the lower part of wing. T. p. line broken, very irregularly marked, blackish opposite the cell, whitish toward inner margin, where a somewhat quadrate rusty brown patch fills the space between t. p. and s. t. lines. S. t. line whitish, broken, very irregular, preceded by black scales which are unevenly distributed. A series of black terminal marks. Reniform gray filled or only outlined in gray. Fringes a little white mottled at the middle. Secondaries smoky, fringes a very little paler. Beneath, costal region of primaries yellowish, cut with smoky at apical third, else smoky. Secondaries, disc yellowish, with a smoky outer border; at outer third of costa an oblique bar extends outwardly nearly to the outer band, where it changes to a narrow, smoky line, running parallel to the outer margin. A smoky discal lunule.

Expands 20-23 mm. = .80-.92 inches.

Hab.—Arizona; Texas.

Three female specimens only, none of them in the best possible condition and all different. I have not seen many of these; but one of my examples is directly compared with the type. The primaries are rather narrow. Secondaries have vein 5 decidedly weaker than the other, from a spur at some distance from the median; 3 and 4 separating about one-third from end of cell. Though so nearly resembling *gonella* in type of maculation, especially on the under side, the origin of vein 5 is remarkably dissimilar.

***Acontia nuicola* n. sp.**

Head, collar and disc of thorax dull gray; patagiæ white. Abdomen with a yellowish tinge. Primaries yellowish white to the middle of the median space, and beyond that whitish above the median vein to the middle of the s. t. space, where it is abruptly and squarely terminated. The basal line is obscurely gray marked. T. a. line marked by a broad, band-like patch on the costa to median vein, then it suddenly becomes thread like and runs inwardly oblique, a greater or less distance toward the inner margin. T. p. line marked by an olivaceous costal patch, which may or may not break up over the reniform, marked by fragmentary black dots opposite the cell, deeply incurved and marked with black interspaceal spots below the cell. Between the middle of the median space and the s. t. line, and from the median vein to inner margin, is a dull gray shading, which may extend obliquely through the s. t. space to the apex, or may

be connected by a gray mottling merely. S. t. line white, broken, very irregular, more or less marked by black scales. A series of distinct, black, terminal marks. Fringes mostly gray, cut with white at or a little below the middle. Orbicular a small black dot. Reniform outlined in olivaceous, small, oval. Secondaries smoky, a little darker in the female. Beneath yellowish. Primaries darker outwardly, with a smoky discal spot, a partial outer band, which starts obliquely outward from outer third of costa, and fringes alternately blackish and yellowish. Secondaries with a smoky outer border, an oblique outward bar, changing to a narrow line and a discal lunule smoky.

Expands 19-22 mm. = .76-.88 inches.

Hab.—Texas, without special locality; all from the Hulst collection.

One male and two females; none in good condition. The species resembles *gonella* in general type of maculation; but differs not only in the white patagiæ, but in the course of vein 5 of the secondaries, which is here moderate and well removed from the median vein. From *sedata*, with which it agrees in structure, it differs by having much more white.

***Acontia lucasi* n. sp.**

Head, collar and patagiæ white; disc of thorax gray. Abdomen with a slightly yellowish tinge. Primaries broadly white along the costal region to the middle of the subterminal space, where it is squarely cut off. The gray shade does not start quite at base in my single example, and I am a little in doubt whether this is due to an imperfection or whether there is a specialized, oval, transparent area below the median vein—I suspect the latter. From this point the gray shade extends solidly to the s. t. line and to the apex. Violet scales are intermixed in this darker portion of the wing. The t. p. line is brokenly marked by black interspaceal dots and scales. S. t. line marked by black scales in the apical dark region, then white, sinuate, cutting the terminal space and the fringe a little below the middle. A series of small black terminal spots. Orbicular a small gray excrescence from the dark into the white shade. Reniform an oval gray spot also joined inferiorly to the gray shading. Secondaries white, diaphanous, gray at apex and very narrowly so along outer border. Beneath, on primaries the maculation of the upper side is less contrastingly reproduced; the dark shades smoky, the lighter yellowish. Secondaries white.

Expands 26 mm. = 1.05 inches.

Hab.—Cape San Lucas, California.

One male received from Dr. Behr who has others; collected by Xantus de Besey. The species is interesting from all points, and especially by the (probable) secondary sexual character on the primaries. The white patagiæ in contrast to the gray disc should serve to differentiate it from its allies. The primaries are trigonate, of moderate length. Secondaries with vein 5 of moderate strength, arising from a short spur from the cross-vein. Veins 3 and 4 fork very little beyond the end of the cell.

Acontia biplaga Guenee.1852, Gn., Spec. Gen., Noct., ii, 218, *Acontia*.1857, Wlk., Cat. Brit. Mus., Het., xii, 785, *Acontia*.1868, G. and R., Trans.-Am. Ent. Soc., ii, 79, var. *aprica*.1874, Grt., Bull. Buff. Soc. Nat. Sci., ii, 36, var. *aprica*.

Head dark gray; collar gray mottled; thorax else white or creamy; abdomen white or a little yellowish. Primaries dark gray or blackish, basal space more or less white mottled inferiorly, rarely almost all white, the t. a line then forming an oblique gray shade line followed by white. Normally the t. a. line is broken, white, often obsolete superiorly. A large, quadrate, costal white patch at about the middle of the wing inclosing the small, round, black orbicular. A smaller, also quadrate white patch at the inception of the reniform. T. p. line broken, black below the costal white patch, very deeply incurved below the cell. S. t. line incomplete, more or less white, preceded by irregular and sometimes prominent black spots, rather regularly and strongly trisinuate. A broken black terminal line. Fringes cut by a white patch at about the middle, but this is a variable feature and may be altogether absent. Reniform obscure, oval, partly outlined in black, in rare instances black filled. Secondaries white, becoming smoky outwardly, more broadly so in the female, with a smoky discal lunule. Beneath mainly white or yellowish, primaries blackish toward apex, relieving the subapical patch of upper side. Secondaries white, with a more or less obvious smoky outer border, a blackish discal mark and a black spot at apical third of costal margin.

Expands 25-29 mm. = 1.00-1.15 inches.

Hab.—Anglesea, New Jersey, September 4th (Smith); Hazleton, Pennsylvania, August (Dietz); Decatur, Illinois, July 1st-7th (Barnes); St. Louis, Missouri, October 31st (Riley); Poncha Springs, Colorado, July 14th (Osler); Florida; Round Mountain (Hulst), Bastrop County (Meske), Texas.

Twelve examples representing both sexes. The localities above given are representative, and the insect occurs throughout the region east of the Rocky Mountains and south of New York, becoming more abundant in the West and Southwest.

The range of variation is not great and the species is, I doubt not, perfectly distinct from *aprica*. In *aprica* a large part of the median space is always white and the tendency is to darken the basal space. In *biplaga* the median space is always dark, except for the costal patches, and the tendency of variation is to lighten the basal space.

The primaries are moderate, trigonate, the apex a little marked, but scarcely pointed. Secondaries with vein 5 weaker than the others, on a short spur from the end of the cell. Veins 3 and 4 branch about one-third from the end of the cell.

***Acontia aprica* Hbn.**1803, Hbn., Schmett. Eur., Noct., f. 371, *Noctua*.1818, Hbn., Verzeichniss, 261, *Tarache*.1829, Steph., Ill. Brit. Ent. Haust., iii, 113, *Acontia*.1852, Gn., Spec. Gen., Noct., ii, 219, *Acontia*.1857, Wlk., Cat. Brit. Mus., Het., xii, 785, *Acontia*.1868, H. Sch., Cuba, Corr.-Blatt, 1868, p. 10, *Acontia*.1874, Morr., Proc. Bost. Soc. Nat. Hist., xvii, 212, *Tarache*.1885, Gundlach, Cont. Ent. Cuba, 312, *Acontia*.

Head brown. Thorax and abdomen white or with a creamy tinge. Primaries white to just before the t. p. line; a gray or brown shade band preceding that line from the costa to the inner margin, though it may be broken just above the reniform. As a rule this band across the costal region cuts off a large, quadrate, white ante-apical spot. T. a. line marked by a blackish costal patch which rarely becomes a half band. Sometimes the basal space is gray mottled, and in one case a washed-out gray pervaded the entire space. T. p. line broken, black, deeply incurved below the cell, followed by blue or violet scales, which partly fill the s. t. space below the middle. Outwardly this space tends to become rusty brown or deep crimson. S. t. line very irregular, broken, whitish, preceded by broken black spots and followed in the narrow terminal space by shadings of brown, luteous and violet. A broken black terminal line. Orbicular a small black dot, sometimes hardly traceable. Secondaries white, with a mere trace of a smoky outer shading. Beneath, primaries yellowish or a little tawny, outer and apical region more or less smoky, the subapical white patch more yellowish. Secondaries white, a small smoky mark at costal two-thirds, and a small smoky discal spot.

Expands 22-28 mm. = .88-1.12 inches.

Hab.—Hazleton, Pennsylvania, August (Dietz); Central Missouri (Riley); Florida; New Mexico; Texas.

Has probably the same range as *biplaga*. Ten examples are before me, representing both sexes. There is really not much variation, and its general type has been referred to under the preceding species.

Wing form and venation are also practically like its ally, save that the branching of 3 and 4 takes place further beyond the end of the cell.

***Acontia areli* Streck.**1898, Streck., Lep. Het. et Het., Suppl. I, 11, *Acontia*.

Head chocolate-brown. Thorax white or creamy; abdomen white, or with a yellowish tinge. Primaries white or creamy to the middle of the median space, the line of separation on the whole parallel with the t. a. line. Basal line geminate, gray, obscure. T. a. line geminate, gray or olivaceous, not prominent, outwardly lunate to the median vein, inwardly lunate below. Above the median vein the gray-brown shading is not margined, below that vein it is edged with blackish, and in the submedian interspace, resting on the t. p. line, is an ovate patch of metallic blue scales. At the inception of the t. p. line is a quadrate white patch on the costa; below, the line is broken, black marked, deeply in-

curved below the cell. S. t. space more or less brown and violet shaded and mottled. S. t. line obscure, broken, yellowish, irregular, preceded by black scales. Terminal space largely bluish or violet, except at apex where it is ochreous brown. A row of black terminal lunules. The fringes are usually mottled with brown, gray and violet, and may or may not be cut with a whitish or yellowish shading at one-third from apex and at the same distance from hind angle. Orbicular an incomplete black ring. Reniform round, of good size, black ringed, metallic blue filled, centered by black. Secondaries soiled whitish or smoky, a little darker along the outer margin. Beneath, primaries tawny, varying in depth, the maculation of upper side obscurely indicated; secondaries whitish, with an obscure dusky lunule, and a dusky costal patch one-third from apex.

Expands 24-30 mm. = .96-1.20 inches.

Hab.—Santa Fé, New Mexico, July (Cockerell); Colorado; Glenwood Springs, Colorado, September (Barnes); Phoenix, Arizona (Barnes); Terloot, California (Behr); Pasadena, California (Smith).

Eight examples, representing both sexes. This species is well defined and varies little in the series from widely separated localities before me. The basal region has usually a yellowish or ochreous tinge; but the costal, ante-apical spot is always white. The round, large, blue filled reniform is further characteristic. The primaries are a little narrower at base and therefore more triangular than in *aprica*. Secondaries with vein 5 nearly as strong as the others, variable in point of origin. It may come directly out of the median at the end of the cell, or it may be on a short spur from the transverse vein, no two specimens being exactly alike in this matter. Veins 3 and 4 branch only a little beyond the end of the cell.

***Acontia crastroides* Guenee.**

1352, Gn., Spec. Gen., Noct., ii, 218, *Acontia*.

1857, Wlk., Cat. Brit. Mus., Het., xii, 784, *Acontia*.

1868, G. and R., Trans. Am. Ent. Soc., ii, 78, *Tarache*.

1881, Coquillett, Papilio, i, 8, larva.

1883, Coquillett, Papilio, iii, 84, larva on rag-weed.

Head brown; thorax and abdomen creamy white. Primaries creamy white from base to apex along costa and from base to median shade along the inner margin. Basal line more or less clearly marked as a dull smoky spot on costa. T. a. line smoky, single, outwardly oblique to the median vein, then nearly vertical and narrowed to the hind margin. Median shade starting as a luteous mark on costa, lost in the cell, but reappearing below it as a broad luteous brown band that reaches the t. p. line and forms the inner portion of the dark marking of the wing. T. p. line luteous on the costa, broken below it, forming a black curve well beyond reniform, then deeply incurved, black, more or less broken, sometimes a little diffuse, always rather prominent. The s. t. space is brown to the costal region, more or less black marked before the s. t. line, often with a violet shading. Terminal space pale luteous. S. t. line of the pale ground, irregularly

sinuate, preceded by black scales and marks. A series of black terminal marks, sometimes forming a line broken on the veins. Orbicular a black dot. Reniform upright, ovate, very obscurely defined, partly lost in the olivaceous luteous shading that extends through and beyond it to the t. p. line. Secondaries smoky, paler at base and with a yellowish tinge. Beneath, primaries blackish or smoky on disc, costal margin yellowish, others pale. Secondaries yellowish, with an obscurely marked outer line.

Expands 17-21 mm. = .68-.84 inches.

Hab.—Canada to Virginia, west to the Mississippi and beyond; Iowa. June to September.

This, next to *candefacta*, is the common eastern species, easily distinguished by the brown head and by the abbreviated dark outer markings. The primaries are proportionately short and broad, the apices and outer margin rounded. Secondaries with vein 5 weak, well removed from the median, out of the cross-vein. Veins 3 and 4 branch about one-third beyond the end of the cell.

***Acontia quadriplaga* n. sp.**

Head and thorax white or a little creamy. Abdomen with a yellow tinge. Primaries smoky or leaden gray. Basal space more or less whitish and gray mottled; the curved, geminate t. a. line being more or less defined through the lower half of the wing. Two large, subquadrate white costal patches; one, a little within the middle, the largest, the other occupying the inner half of s. t. space at that point. Inferior half of median space more or less violet shaded and this tint extends into the s. t. space. T. p. line very imperfect, marked by fragmentary, black, interspaceal lines and dots. S. t. line slender, irregular, pale, more or less incomplete, usually preceded by carmine shadings. The upper half of the wing often with a luteous or olivaceous tinge. Terminal space unusually narrow, partly violet and brown mottled. A broken, black terminal line. Fringes gray, brown or violaceous, with or without a whitish shading at one-third from hind angle. Orbicular wanting. Reniform obscure, oval, laterally marked by blackish crescents. Secondaries yellowish, paler in the males, with a narrow dusky margin. Beneath yellowish, disc of primaries more or less blackish, the apical and usually also the median costal spots of upper side indicated; secondaries practically immaculate.

Expands 20-24 mm. = .80-.96 inches.

Hab.—Hot Springs, New Mexico, 7000 feet alt. (Hulst); Arizona; Texas.

Eight examples, of which only one is a male. There is little variation except in size and in the amount of pale basal shading. It is probable that this species has been confused with *aprica* and *biplaga*, than which it has broader, shorter primaries, lacking all trace of orbicular. The secondaries are distinctly yellowish, have vein 5 a little weaker, arising from a short spur from the median, and 3 and 4 branching only a short distance beyond the cell.

***Acontia schwarzii* n. sp.**

Head, thorax and abdomen white. Primaries white and gray mottled in the basal space; the t. a. line white, indented in the submedian interspace, gray margined. Beyond this the white shade extends below the median vein, to the middle of the median space; above, it extends to the middle of the s. t. space where it is abruptly and squarely cut off. A gray cloud, indicating the median shade on the costa, tends to cut off a quadrate ante-apical patch. The inner portion of the gray shading tends to brown, a rather feebly defined band indicating the median shade. The s. t. line is traceable as a slender, irregularly denticulate blue line. Apex brown. S. t. line unusually close to the outer margin, marked by a few black and white scales toward apex; white and sinuate below middle. Fringes white, interlined with black toward apex. Orbicular wanting. Reniform an oval gray spot. Secondaries white, with a variably broad outer margin, darker in the female. Beneath, primaries black, margins narrowly white, fringes white. Secondaries white, with a narrow dark outer margin.

Expands 25-26 mm. = 1.00-1.05 inches.

Hab.—Catalina Spring, Arizona, July 24th (E. A. Schwarz); Phoenix, Arizona, January 15th (Dr. Griffith).

One male and one female are at hand and resemble each other generally. The variation is in the amount of the gray shading in the wings. The primaries are moderate or rather broad. Secondaries with vein 5 weaker than the others, from a spur at the end of the cell. Veins 3 and 4 branch just beyond the end of the cell.

***Acontia arida* n. sp.**

Head and thorax white or creamy; abdomen a little yellow tinged. Primaries white or creamy from base to near the middle of median space, then obliquely curved toward costa to the middle of the median cell, thence outward, nearly parallel with the costa to the middle of the s. t. space and there abruptly terminating against the dark olivaceous apical space. The basal space is variably gray clouded. T. a. line gray marked on the costa, then by an incurved yellow crescent in the middle of the wing. The lower outer portion of median space, extending outward to s. t. line and curved upward toward apex, is leaden gray, yellow or olivaceous shaded outwardly, the apex brown tinged. A broad gray or olivaceous shade extends from costa above the reniform toward the gray portion of the median space, cutting off, in whole or in part, a quadrate white patch on the costa before the apex. T. p. line irregular, denticulate, blue, slender, more or less obviously geminate. S. t. space more or less brown tinged. S. t. line violet through apical patch, yellow or whitish and broadening inferiorly, inwardly and upwardly angulate opposite the hind angle so as to reach almost to the end of the median vein. The usual series of black terminal dots or marks is wanting, and there is a paler line not quite terminal. Fringes olivaceous or violaceous at hind angle and at apical third, else whitish or yellowish. Orbicular wanting. Reniform an obscure leaden gray, somewhat oval spot. Secondaries in the male soiled white, a little darker outwardly; in the female smoky, a little

paler toward base. Beneath, primaries yellowish, with the markings of upper side obscurely duplicated; secondaries whitish, with a feeble discal lunule.

Expands 21-23 mm. = .84-.92 inches.

Hab.—Glenwood Springs, Colorado, June and July (Barnes); Catalina Springs, Arizona, April 7th and 15th (Schwarz); Argus Mountains, Arizona, April (Koebele).

Ten males and two females, mostly in good condition. There is very little variation. The amount of gray shading in the basal space differs, and the ante-apical white patch on the costa may or may not be completely cut off; usually it is not. But these differences do not change the characteristic appearance of this, one of the most distinct species in the genus.

The primaries are trigonate and rather short. Secondaries with 5 distinctly less developed than the others, from a short spur from the median. Veins 3 and 4 vary in their point of furcation from near the end of the cell to beyond one-third to the outer margin.

***Acontia coquillettii* n. sp.**

Head, thorax and abdomen white, with a slight creamy tinge. Primaries creamy white from base to near the t. p. line on inner margin, and almost to s. t. line on the costa. T. a. line marked by geminate gray costal clouds and by a gray blotch in the cell. Median shade marked by a gray costal blotch. T. p. line obsolete, except through the dusky space below vein 3 and there whitish, linear, denticulate. This dusky shade extends along the inner margin a little before the t. p. line to the s. t. line, then upward, rather abruptly rounded off at about vein 3. A yellow shading, a little re-inforced by a gray patch, connects this through s. t. space with the dark apical patch. S. t. line narrow, thread like and whitish through apical patch, where it is margined and emphasized by black and metallic-blue scales, then lost in the pale terminal space. Terminal space gray mottled. A gray, preceded by a yellowish terminal line. Fringes creamy white, with a gray interline above the middle. Orbicular wanting. Reniform a yellow, oval spot, which is not outlined and not relieved. Secondaries smoky or blackish, with white fringes. Beneath, primaries blackish, with an ante-apical yellowish blotch and whitish fringes. Secondaries whitish at base, blackish exteriorly. An outer smoky line is indicated on the costa.

Expands 25 mm. = 1. inch.

Hab.—Los Angeles Co., California (Coquillett).

A single female example only, lacking part of the abdomen. The blackish secondaries and practical lack of the ordinary spots make this an easily distinguishable form. The primaries are like those of *candefacta* in form, and, indeed, resemble it in general pattern of maculation. The secondaries have vein 5 nearly as strong as the others, arising from a spur from the median; 3 and 4 branched at or very little beyond the end of the cell.

Acontia neocula n. sp.

Head, thorax and abdomen white, the latter sometimes with a yellowish tinge. Primaries white from base to an outer, olivaceous gray shade, which begins just within the t. p. line and is outwardly sinuate and narrowed to the costa just within the s. t. line. This white space is unbroken, except for a gray costal cloud at base and over the end of the cell, indicated in three of the eight examples before me. A vague yellowish shading indicates the reniform. There is a quadrate yellowish or olivaceous patch beyond the cell, not very clearly marked, invading the gray space for half its own width. T. p. line indicated as an irregular, pale, slender line near the hind margin. S. t. line slender, white, irregular, very close to outer margin. Terminal space shaded with violaceous. A gray, preceded by a pale, terminal line. Fringes white except at apex. Orbicular absent. Reniform traceable only as already stated. Secondaries white, with a narrow, smoky, outer margin, running out at anal angle. Beneath, primaries white basally, smoky over the dusky shading on the upper surface. Secondaries white.

Expands 19-25 mm. = .76-1.00 inches.

Hab.—Hot Springs, New Mexico, 7000 ft. (Hulst); Texas.

Five males and three females, all very much alike. This is usually confused with *cretata*, and it is not impossible that it is a form of that species only. The main distinctive characters are smaller average size, much narrower outer dusky band and almost entire absence of costal shading. The primaries are like those of *cretata*. In the secondaries 3 and 4 fork at the end of the cell, 5 is decidedly weaker than the others and arises from a spur from one-fourth to one-third of the cell width from the median vein.

Acontia cretata Grote and Robinson.

1868, G. and R., Trans. Am. Ent. Soc., iii, 181, pl. ii, f. 78, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia*.

Head, thorax and abdomen white, the latter sometimes with a yellowish tinge. Primaries white from base to middle of median space, upcurved to the cell, forming there a step or jog, above which the reniform is traceable, crossing the cell space on the t. p. line, then again forming a step half way across s. t. space and terminating squarely. The costal portion of basal space is gray mottled, relieving the t. a. line, which is traceable half way across the wing in all but two of my specimens. Another gray cloud is at the inception of the median shade, and this often extends so as to almost meet the outer gray space. Sometimes the costa is gray to the inception of the t. p. line. Orbicular wanting. Reniform indicated in all examples by the notching of the outer dark space and in some specimens traceable in gray. The median shade line is marked as a curved darker line through the gray outer shading, and within this the shading is more olivaceous or even yellowish. T. p. line slender, blue, very irregular and below the middle with acute outward venular teeth. S. t. line very irregular, white, slender, at the apex marked with metallic-blue scales; the apical space itself usually golden brown tinged. Terminal space very narrow, more or less violaceous. A terminal gray, preceded by a white line. Fringes mostly white, except toward apex.

Secondaries white, with an outer smoky margin, which runs out at anal angle. Beneath, primaries smoky, tending to yellowish at base; secondaries whitish. Expands 21-26 mm. =.84-1.05 inches.

Hab.—Colorado; Bluff, Utah; Texas in May.

Three males and seven females are at hand and I have seen many others. The primaries are moderate in length, proportionally rather broad, trigonate. The secondaries are as in *neocula* as to venation.

The general range of variation has been fairly stated in the description, and it consists chiefly in the amount of gray shading along the costal region toward base. We have in this species a decided indication of the reniform spot, and in the square termination of the white space on the costa, a decided tendency toward a square subapical patch, which is further intensified by the gray shading from costa, which, in one example, all but cuts off such a spot.

***Acontia behrii* n. sp.**

Head and thorax white; abdomen with a slightly yellowish tings. Primaries white from base to the middle on the inner margin to a brown shade, which is sharply defined and extends obliquely outward to the outer median vein, is there squarely upright to the upper angle of cell, and then forms an abrupt step which extends nearly to the s. t. line. The white shade here forms an outward tooth, and is then oblique to the costa at middle of s. t. space. Basal line indicated by geminate gray costal clouds. T. a. line geminate, gray, complete in the specimen before me. A gray cloud indicates the beginning of the t. p. line. The outer dusky shade is mostly dull brown to the s. t. line. The median shade line is blackish and extends from vein 3 to the inner margin. S. t. line a slender, zig-zaged blue line, partly preceded and partly followed by a darker, umber-brown shade. A black dot follows it opposite the hind angle. Terminal space mostly blue, white from a little over middle to near the inner angle. S. t. line irregular, narrow, incomplete, whitish. Fringes steel-gray or bluish at apex and inner angle, else whitish. A slender, broken, black terminal line. Neither orbicular nor reniform marked in the specimen. Secondaries white, with a bluish reflection and a smoky outer margin, widest at apex. Beneath, primaries smoky, tawny toward base and along costa; secondaries white.

Expands 25 mm. = 1. inch.

Hab.—California.

A single male example given me by Dr. Behr who had others. I do not recollect, if I was told, from what especial region this came. At all events the species is a very good one, differing from its immediate allies in the much sharper maculation, which is not smooth or glossy gray and is without olivaceous shading.

The primaries are a little broader than in *cretata* and compara-

tively shorter. In the secondaries the venation is like *cretata*, save that vein 5 is a little nearer the branching of 3 and 4, which is at the end of the cell.

Acontia elegantula Harvey.

1876, Harv., Can. Ent., viii, 55, *Thalpochares*.

1880, Grt., Can. Ent., xi, 58, *Thalpochares*.

1882, Grt., New List, 37, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia*.

semiopaca Grote.

1878, Grt., Bull. Geol. Surv., iv, 182, *Tarache*.

1882, Grt., New List, 37, pr. syn.

arizonæ Hy. Edwards.

1878, Hy. Edw., Pacific Coast Lep., No. 29, 7, *Thalpochares*.

1880, Grt., Can. Ent., xii, 58, *Thalpochares*.

1882, Grt., New List, 37, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia*.

seminivealis Hulst.

1886, Hulst, Trans. Am. Ent. Soc., xiii, 157, *Orobæna*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 300, pr. syn.

Head, thorax and abdomen white or creamy. Primaries white or creamy from base to the upright luteous brown median shade, and beyond the wing is luteous, varying to gray. S. t. line marked by a pale cloud on the costa and more or less obscurely traceable as a sinuate, broken pale line. S. t. line whitish, a little sinuate, rarely complete, sometimes marked only at the costa and on inner margin. A series of small terminal lunules. Orbicular wanting. Reniform round, gray, narrowly annulate with pale. Secondaries white or nearly so, iridescent, a little smoky outwardly. Beneath, primaries yellowish, outer half a little darker; secondaries white.

Expands 17-22 mm. = .68-.88 inches.

Hab.—Montana, June; Nevada; Colorado; Phoenix, Arizona, March 12th (Griffith); Argus Mountains, April (Koebele); Hot Springs, New Mexico, 7000 ft. (Hulst); California.

Three males and nine females before me. The species ranges considerably in size, and it is the smaller form that Edwards considered as distinct under the name *arizonæ*. This is also the same as Hulst's *seminivealis*.

Aside from this, there is not very much real variation. The outer darker space differs a little in ground color, and the t. p. and s. t. lines are more or less incomplete; but none of these affects the general appearance of the species.

As a matter of fact this species is better referred to *Thalpochares*, because, in all the specimens examined, the accessory cell of primaries is wanting. Of course, this occurs—exceptionally—in other species, but it seems here to be the rule. As Mr. Grote has referred

it to *Acontia*, and as it really resembles these species closely, it may be left here for the present until a generic revision of the whole group is made. The secondaries have 5 very weak, scarcely more than a fold, from the cross-vein near the middle of cell, 3 and 4 together out of the median at the end of the cell.

***Acontia virginalis* Grote.**

1881, Grt., Can. Ent., xiii, 151, var. *binocula*.

1881, Grt., Papilio, i, 155, ? var. *binocula*.

Head and thorax white; abdomen with a faint yellowish tinge. Primaries creamy white, except for a yellow median shade band and a yellow and smoky band curved from outer third of inner margin to the apex. The yellow median band is at almost the middle of the wing, tends to become darker inferiorly and forms the inner margin of the dusky shading. This fills the space to the t. p. line, curving up to and beyond the reniform, then extended as a more yellow cloud to the gray apex. Above the reniform the costa is creamy, but tends to yellow cloudings. At apex there is a gray shade, through which the pale s. t. line becomes visible; toward middle the s. t. and terminal spaces become creamy, with a variably deep yellow tinge. A series of very small black terminal dots. Fringes whitish except at apex. Orbicular wanting. Reniform round, leaden gray, annulate with white. Secondaries white, with a smoky outer border, lost before reaching the anal angle. Beneath, primaries smoky on disc, costal margin yellowish, fringes and inner margin white. Secondaries white.

Expands 23-25 mm. = .92-1.00 inches.

Hab.—Denver, Colorado; Arizona.

Two males and two females. Except for a little difference in the intensity of the yellow or gray shading there is no variation. The gray tends to disappear, leaving the yellow dominant, and altogether this is the palest species of its type. It was originally described as a variety of *binocula*, but later in the same year Mr. Grote suggested the question: "Is it a variety?". From the material at hand I think it is a good species, distinguished from *binocula* as noted in the synoptic table and elsewhere.

The secondaries have vein 5 very weak, from the cross-vein well toward its middle. It is a typical 3-fid. The median forks into 3 and 4 well beyond the end of the cell.

***Acontia binocula* Grote.**

1875, Grt., Can. Ent., vii, 224, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia*.

Head thorax and abdomen white, the latter often with a yellowish tinge. Primaries white or creamy to a broad yellow or olivaceous median band, which, from the middle of the cell, forms the anterior border of a gray shade, which fills all the space below the reniform to the s. t. line and is continued beyond reniform obliquely to the apex. Terminal space usually white shaded below the apical region, but there is always a gray underlay which sometimes darkens it to the

margin. A series of black terminal dots. Fringes white or gray. The t. p. line is usually traceable by pale scales and by a leaden or violet gray shading which forms the middle of the dark space toward the inner margin. Orbicular wanting. Reniform round or nearly so, gray, annulate with pale. Secondaries white, with a narrow smoky outer border, which is lost before reaching the inner angle. Beneath, primaries smoky, yellowish along the costal edge, white on fringes and along inner margin. Secondaries white.

Expands 18-27 mm. = .72-1.08 inches.

Hab.—Texas in May; Arizona; Colorado, June 28th (Wheeler Survey); Poncha Springs, Colorado, July 14th (Osler); Black Hills, Montana (Hulst); Kansas in July.

Two males and five females. Though my largest example exceeds any *virginalis* before me, yet the latter is, on the whole, the larger species and looks it. *Binocula* is much darker as a whole and lacks the distinctive yellow appearance of *virginalis*. Smaller examples are much like *candefacta*, save that they always lack the orbicular.

In venation the secondaries are like *virginalis*, save that 3 and 4 branch further beyond the cell.

***Acontia meskei* n. sp.**

Head, thorax and abdomen creamy white. Primaries creamy white to the middle of wing along inner margin and above the median vein nearly to the s. t. line. Basal line marked on the costa. T. a. line marked by a black costal patch, else lost. The t. p. line also begins on a larger or smaller dark costal patch, is a broken upright blackish line far beyond cell, and a series of upright interspaceal black marks below the reniform to the inner margin. Median shade marked by a brown band just before the t. p. line below the median vein. Beyond this portion of the t. p. line is a violet shade to the s. t. line. S. t. line creamy, irregular, broken, preceded by golden brown shades, and in the apical region by black spots. Terminal space broken, with brown, creamy and violet shadings. A broken blackish terminal line. Orbicular a small black dot. Reniform obscurely indicated only by scattered brown scales. Secondaries with a yellowish tinge, a little smoky outwardly. Beneath, primaries yellowish, with a dusky discal spot, and angulated, broken exterior line, a dark apex and smoky blocked fringes. Secondaries yellowish, with a dusky discal mark, a smoky patch on the costa giving rise to a slender line, which gets less than half way across the wing, and a narrow blackish outer border.

Expands 20-22 mm. = .80-.88 inches.

Hab.—Texas.

Two males from the old Meske collection, probably taken by Boll. The species is quite characteristic and not easily confused with any of its allies. The primaries are rather narrow for their length, a little subparallel. The secondaries have vein 5 weak, from the cross-vein at some distance from the median; 3 and 4 branch well beyond the end of the cell.

***Acontia tenuicola* Morrison.**

1874, Morr., Proc. Bost. Soc. N. H., xvii, 218, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 299, *Acontia*.

Head and thorax white or creamy. Abdomen a little gray, with narrow white rings faintly indicated in the female. Primaries white at base, above the median vein extending to the s. t. line; below the vein extending to the middle of the median space in the male to the t. a. line only in the female. Basal line indicated on costa. T. a. line marked on the costa, and in the female defined below the median vein by the gray portion of the wing, in the male the line is more or less indicated by gray shadings. Basal space otherwise also gray clouded in some examples. Outer part of wing luteous brown in the median space, more or less violaceous in the s. t. space; luteous brown in the terminal space. Median shade marked on the costa and again below median vein, where in the male it forms the inner border of the dark part of the wing. T. p. line dusky on the costa, then whitish, narrow, irregular, often in great part obsolete. S. t. line whitish, irregularly sinuated and toothed, preceded by brown shadings below the apex and again at about the middle. Terminal space brown. A series of small black terminal lunules. Fringes brown, cut with white at the middle. Orbicular a black dot, always distinct in the female, tending to disappear in the male. Reniform small, round, a black or brown ring, white or yellow center. Secondaries white in the male, with a narrow smoky outer border. Yellowish in the female, with a much broader smoky outer shading. Beneath, primaries blackish, with a yellowish streak in the cell, and a subapical mark on costa. Secondaries whitish, with a narrow smoky outer border and a smoky spot on costa toward apex.

Expands 17-20 mm. = .68-.80 inches.

Hab.—Texas in April; Hot Springs, New Mexico, 7000 feet (Hulst); Las Cruces, New Mexico, May 8th (Townsend).

Four males and eight females, the difference in maculation constant between the sexes. In all the females the dark shade begins at the t. a. line below the cell; in none of the males does it begin before the median shade. In the males the orbicular becomes much reduced, and in two examples is entirely wanting.

As for the rest, the variation is chiefly in the amount of gray shading in the basal space and along the costa. There is also a difference in the s. t. and terminal spaces, which tends to become mottled.

The primaries are a little narrower than usual, tending to subparallel. Secondaries with 5 weak, well removed from the median, out of the cross vein, a real trifold; 3 and 4 branch well beyond the end of the cell.

***Acontia libedis* n. sp.**

Head and thorax creamy white; abdomen white or faintly yellow tinged. Primaries yellowish or creamy, the terminal space mostly gray, a large quadrate gray and brown patch a little beyond the middle on the inner margin. This patch extends from the median shade to the t. p. line, and from the inner mar-

gin to the median vein. Basal line feebly indicated on the costa. T. a. line olive-gray or luteous, outcurved or angulated, single, usually complete and sometimes a little expanded on the inner margin. The basal space may be more or less gray clouded. Median shade line luteous or olivaceous on costa, outwardly oblique to the median vein, there angulated and inward to inner margin within the middle, there brown or black, edging the dusky patch already limited. Beyond this shade the wing in one specimen is all obscured with olivaceous. T. p. line luteous, narrow, single, outcurved over the cell, rather evenly incurved below. Preceding this line the quadrate patch on inner margin tends to a violet shading. The s. t. space is shaded with luteous or olivaceous. S. t. line pale, irregular, close to outer margin an outward tooth cutting the terminal space below the apex. A broken black terminal line preceded by a paler line. Fringes gray or brown, cut with yellowish at apex and about middle. Orbicular a small black dot. Reniform moderate in size, a gray or brown ring with a pale centre. Secondaries white or with a faint smoky tinge, and with a very narrow outer border. Beneath, primaries yellowish, with disc more or less smoky; secondaries white or faintly yellow tinged, immaculate.

Expands 18-21 mm. = .72-.84 inches.

Hab.—Denver, Colorado, August 11th (Osler); Hot Springs, New Mexico, 7000 ft. (Hulst); Texas in April.

Five males and three females. Of these, one pair from Colorado is fresh and in good condition; the others are flown and more or less imperfect, so that I hesitated at first to consider them identical. There is no reasonable doubt, however, though it may be that Texan examples are on the whole a little paler than those from Colorado. The single New Mexican example is intermediate. The variation is in the intensity of the dusky shading, and fresh examples will probably seem darker because the dark scales overlay the yellow or creamy base.

The primaries are rather narrow and elongate, subparallel. In the secondaries, vein 5 is scarcely more than a mere fold, from the cross-vein well removed from the median. It is therefore a good trifold. Veins 3 and 4 do not separate until near or even beyond the middle of their course.

***Acontia neomexicana* n. sp.**

Head and thorax white. Primaries creamy white, broken mainly by a gray shade curving from inner margin beyond the middle to the apex, interrupted above the cell. A yellow t. a. line is faintly indicated. Median shade yellow, outwardly oblique from the costa to the median vein, there bent and inwardly oblique to the inner margin, forming the inner border of the gray shade. This shade on the inner margin extends to the s. t. line, but narrows until, just below the reniform, it does not extend beyond the t. p. line. Beyond the reniform is a gray and yellow patch marking the t. p. line, and beyond this a paler gray shade extends to the apex. T. p. line through the dark portion is narrow, irregular,

violaceous, a tint which obtains also in the lower portion of s. t. space. Remainder of s. t. space yellow tinged, except at apex. S. t. line whitish, quite broad, irregular. Terminal space pale gray. A series of black terminal dots. Orbicular a small black dot. Reniform round, gray, pale centered. Secondaries white, with a narrow smoky outer border. Beneath, primaries smoky, overlaid by yellow, glistening; secondaries white, broadly yellow along costal margin.

Expands 20 mm. = .80 inches.

Hab.—Texas, July 23rd (Belfrage).

A single male only. The species looks like a much reduced *virginalis* with an orbicular dot. It also resemble *libedis*, but the dark shading is not so abruptly cut, and though interrupted it extends to the apex. Primaries a little narrower than *candefacta*, than which species this is much paler. Secondaries with vein 5 weak, from the cross-vein well removed from the median. Veins 3 and 4 branch at about one third beyond the cell.

***Acontia candefacta* Hubner.**

1823, Hbn., Zutraege, iii, ff, 587, 588, *Tarache*.

1852, Gn., Spec. Gen., Noct., ii, 216, *Acontia*.

1857, Wlk., Cat. Brit. Mus., Het., xii, 784, *Acontia*.

1880, Grt., Can. Ent., xii, 118, *Tarache*.

1883, Coquillett, Papilio, iii, 84, larva.

debilis Wlk.

1857, Wlk., Cat. Brit. Mus., Het., xii, 786, *Acontia*.

1868, G. and R., Trans. Am. Ent. Soc., ii, 78, pr. syn.

Head, thorax and abdomen white or with a creamy tint. Primaries white or creamy to the median shade, beyond which the wing is mostly leaden gray, varied with yellow or olivaceous. There is a leaden gray spot on the cell near the base, which may be absent or may expand into a shading that clouds most of the basal space. T. a. line usually marked on the costa by a gray spot, sometimes forming an outcurved band across the wing, more usually defined below the cell only. Median shade band-like, oblique from costa to the median vein, there bent or curved inwardly to form the inner margin of the gray outer portion. In color it is yellow, luteous, olivaceous or gray, and it is rarely complete across the cell. It may be only a costal patch, and between that and a complete bar all intergrades occur. The dark space on the inner margin extends from median shade to subterminal line usually includes the reniform and curves beyond it to the apex, the s. t. space being all gray. T. p. line very irregular, bluish, slender, often wanting, sometimes merged into a bluish shading. S. t. line whitish, broad, prominent, irregular, cutting the terminal space below the apex. Terminal space narrow, largely white or white mottled, except at apex. A series of black, somewhat lunate terminal spots. Fringes long, usually gray, generally cut with white at or a little below the middle. Orbicular a small black dot, occasionally obsolete in the male. Reniform moderate in size, solid gray, annulate with whitish. Secondaries soiled whitish to smoky, darker outwardly, fringes white. Beneath, primaries smoky or blackish, the margins paler; secondaries whitish.

Expands 18-21 mm. = .72-.84 inches.

Hab.—United States and Canada east of the Rocky Mountains, taken from May to September in the northern part of its range, March and April in Texas and Florida.

Walker cites in the synonymy *Phytometra minuta* Haw., Lep. Britt., 265, with what justice I do not know.

This species is by all odds the most common representative of the genus as well as the most widely distributed. In the large series before me little real variation occurs. The contrasts may be all sharply defined, there may be a black shade in the darker part of the wing, or everything may run toward olivaceous or yellowish. Yet the characteristic appearance of the species is not changed.

The primaries are moderate in length, trigonate, the apices well marked. In the secondaries vein 5 is weak, and from the cross-vein well removed from the median. Veins 3 and 4 separate at varying distances beyond the cell, averaging about one-third of the way to outer margin.

Acontia ardoris Hubner.

1823, Hbn., Zutraege, Samml. Ex. Schmett., iii, 34, ff. 551, 552, *Tarache*.

1852, Gn., Spec. Gen., Noct., ii, 216, *Acontia*.

1857, Wlk., Cat. Brit. Mus., Het., xii, 758, *Acontia*.

1880, Grt., Can. Ent., xii, 118, *Tarache*, ? an American.

Size and appearance of *candefacta*, of which it is a near neighbor. Primaries of a yellowish white, with a basal spot, a subterminal half line and the middle below the cell leaden gray. The latter space traversed by undulated deeper lines and surmounted by a yellow or olive tint that forms a band anteriorly, and circumscribes a semicircular costal space of the ground color, in which are two black punctiform spots, of which the first is often the only one visible. At the apex this shade is tinted with red-brown. Fringe white above, leaden inferiorly. Secondaries yellowish white, uniform, similar in both sexes. Beneath, primaries tinged with reddish, the marks showing through.

The above is a free translation of Guenée's description of South American examples, and he remarks that he has not seen Georgian specimens.

I saw these examples at Paris and noted them as having the maculation of *candefacta*, but a darker color and narrower wings.

LIST OF THE SPECIES.

TORNACONTIA Smith.

T. sutrix Grt.

T. megocula Smith.

CONACONTIA Smith.

C. flavicosta Smith.

C. angustipennis Grt.

ACONTIA Ochs.

A. terminimaculata Grt.
A. delecta Wlk.
 metallica Grt.
A. flavipennis Grt.
A. abdominalis Grt.
A. lactipennis Harv.
A. major Smith.
A. expolita Grt.
A. lanceolata Grt.
A. gonella Strck.
A. sedata Hy. Edw.
A. nuicola Smith.
A. lucasi Smith.
A. biplaga Gn.
A. aprica Gn.
A. areli Strck.
A. erastroides Gn.
A. quadriplaga Smith.
A. schwarzii Smith.

A. arida Smith.
A. coquillettii Smith.
A. neocula Smith.
A. cretata G. and R.
A. behrii Smith.
A. elegantula Harv.
 semiopaca Grt.
 arizonæ Hy. Edw.
 seminivealis Hulst.
A. virginalis Grt.
A. binocula Grt.
A. meskei Smith.
A. tenuicola Morr.
A. libedis Smith.
A. neomexicana Smith.
A. candefacta Hbn.
 debilis Wlk.
A. ardoris Hbn.